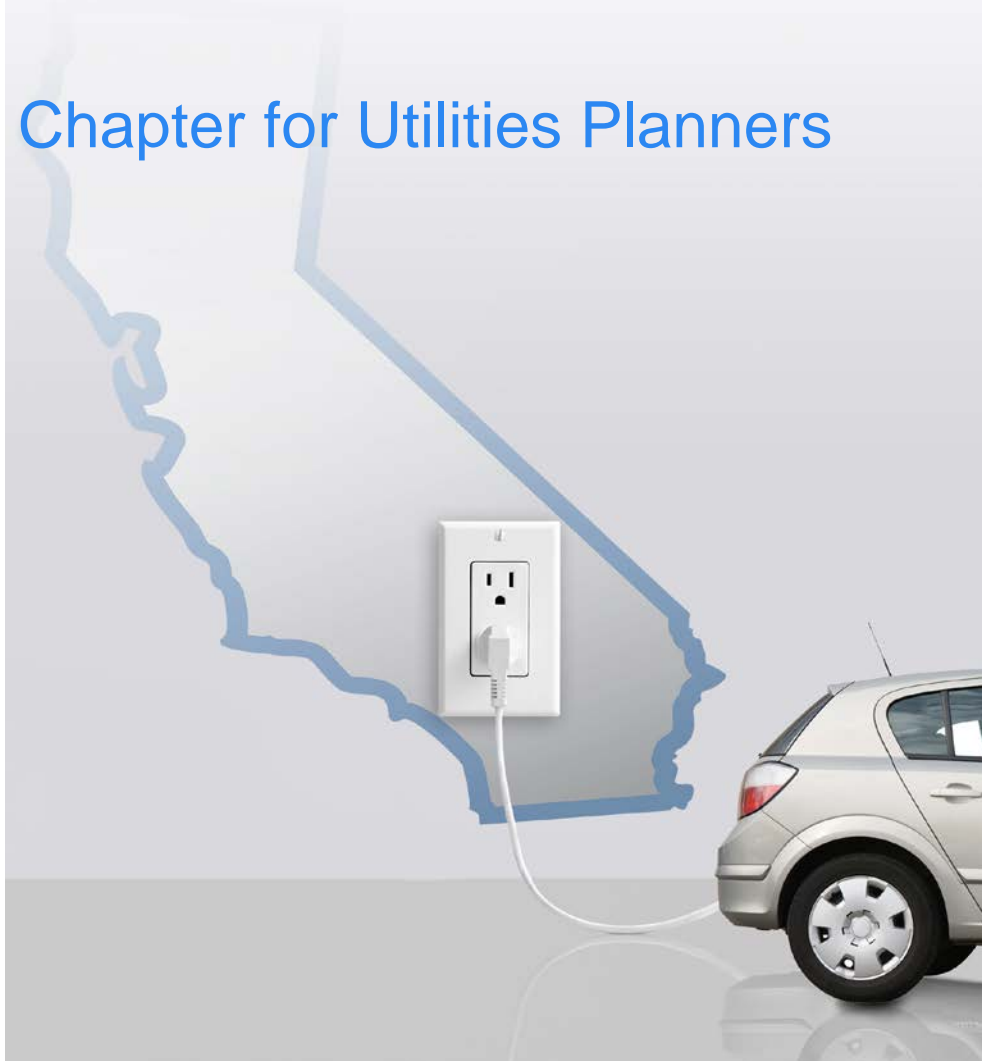


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FOR INNOVATION

Southern California Plug-in Electric Vehicle Readiness Plan

Chapter for Utilities Planners



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14 Utility Policies

14.1 Introduction

Electrical utilities currently play three important roles in the plug-in electric vehicle (PEV) ecosystem. First, they provide and price fuel for PEVs. Second, they regulate aspects of the installation of charging equipment. For example, they may issue permits, require electrical upgrades, and in some cases require the installation of a second meter to track PEV energy consumption. Because of these two roles, utilities are also naturally positioned to undertake their third role as educators of customers on the decision process and value proposition associated with charging equipment installation in different land uses.

This chapter provides planners with the information they need to understand and advocate for greater utility PEV readiness. It first presents an analysis of which utilities in the Southern California Association of Governments (SCAG) region currently have the highest numbers of PEVs so that regional planners can understand which utilities need to prioritize PEV readiness. We then review the current state of several utility PEV policies including:

- Expedited permitting
- Time-of-use rates
- Incentives for charging equipment installation
- Second meter requirements

Lastly, we review the state of utilities' PEV educational materials for their customers, noting best practices whenever possible.

14.2 Current and future PEV ownership across utilities within the region

The SCAG region has over 15 electrical utilities operating within its boundaries. For the larger

utilities⁴², [Table 14.1](#) shows the current number of PEVs registered within each utility.⁴³ It also shows projected PEV growth rates to 2017 and 2022.

Nearly all the PEVs in the SCAG region are registered within two utility service territories. The Southern California Edison service territory contains 68% of all PEVs while the Los Angeles Department of Water and Power (LADWP) contains 22%. Together these two utilities contain 90% of the region's PEVs. The conservative lower-bound projections in [Table 14.1](#) are based on growth rates that reflect annual growth rates of early standard hybrid ownership (specifically, the Toyota Prius). This growth trajectory would mean a minimum baseline of nearly 180,000 new PEVs by 2017 and more than 700,000 by 2022.

42 Utilities not represented by the Southern California Public Power Authority and that have less than 2 PEVs attributable to their service territories have been excluded from this analysis. They are Bear Valley Electrical Service, Corona Water and Power, City of Needles, and Victorville Municipal Utility Services.

43 The counts are based on data from R.L. Polk & Co. on PEVs newly registered from December 2010 to September 2012.

Table 14.1: PEV growth in SCAG utility service territories

Utility	Number of PEVs in utility territory	% share	2017			2022		
			Lower Bound	+ 5%	+ 10%	Lower Bound	+ 5%	+ 10%
Azusa Light and Water	8	<1%	171	191	209	689	927	1,216
Burbank Water and Power	59	1%	1,260	1,406	1,540	5,083	6,836	8,965
Cerritos Electric Utility	53	1%	1,132	1,263	1,383	4,566	6,141	8,053
City of Colton Public Utilities	1	<1%	21	24	26	86	116	152
Glendale Water and Power	103	1%	2,200	2,454	2,688	8,874	11,934	15,650
Pasadena Water and Power	119	1%	2,542	2,836	3,106	10,253	13,788	18,081
Vernon Light and Power	1	<1%	21	24	26	86	116	152
Anaheim Public Utilities Department	99	1%	2,114	2,359	2,584	8,529	11,471	15,042
City of Banning Electric Utility	1	<1%	21	24	26	86	116	152
Imperial Irrigation District	59	1%	1,260	1,406	1,540	5,083	6,836	8,965
LA Department of Water and Power	1,809	22%	38,636	43,105	47,213	155,856	209,603	274,864
Riverside Public Utilities	65	1%	1,388	1,549	1,696	5,600	7,531	9,876
Southern California Edison	5,650	68%	120,672	134,628	147,459	486,781	654,647	858,475
Anza Electric Cooperative	2	<1%	43	48	52	172	232	304
Moreno Valley Electric Utility	5	<1%	107	119	130	431	579	760
Rancho Cucamonga Municipal Utility	9	<1%	192	214	235	775	1,043	1,367
San Diego Gas and Electric	278	3%	5,937	6,624	7,256	23,951	32,211	42,240
TOTAL	8,321	100%	177,717	198,274	217,169	716,901	964,127	1,264,314

14.3 Streamlining permits and site inspections

A utility that is slow to permit or inspect can cause delays and cost increases during the installation of charging equipment. Streamlining permitting and inspection is an operational improvement that signals utilities are PEV-ready. As an example, LADWP promises a “7-Day Permit-to-Plug” process (Los Angeles Department of Water and Power 2012). If consistently applied, such policies can reduce upfront costs and expedite installation.

14.4 PEV time-of-use rates

Utilities are directly affected by the changes in electrical load as a result of PEV charging. Although nighttime off-peak charging will help to increase grid efficiency and revenue for utilities, daytime on-peak charging can be highly demanding on the grid, particularly if provided at high power to shorten charging times.

Some utilities because some utilities incentivize efficient charging behavior by offering PEV time-of-use (TOU) rates that make off-peak charging cheaper and on-peak charging more expensive. TOU rates vary with aggregate demand for electricity, which varies with the time of day. An example of the rate schedule is LADWP’s offering to single-family residents (Los Angeles Department of Water and Power 2012). The utility separates the day into three demand periods: off-peak (8:00 p.m. – 10:00 a.m., weekends), low peak (10:00 a.m. – 1:00 p.m. and 5:00 p.m. – 8:00 p.m.) and high peak (1:00 p.m. – 5:00 p.m.). This option proves beneficial to PEV drivers, as rates are lowest at night or during “off-peak” hours, a period when most PEV drivers charge their vehicles. The TOU option can be offered to both single-family and multi-unit dwelling (MUD) households, as well as to businesses.

14.4.1 Single-family residential policies

For single-family households, a utility can offer two TOU options: PEV-only TOU and whole-house TOU. The first option applies TOU rates to only the electricity used for charging the PEV while the second places the electrical consumption of the entire household on TOU rates. In either case, a separate or replacement TOU meter is often necessary to record variable electricity use. Some utilities, such as San Diego Gas and Electric, use existing household meters to track whole-house electricity use.

PEV TOU rates. LADWP, San Diego Gas and Electric, and Southern California Edison are currently the only Southern California utilities offering a PEV-only TOU rate. This may suggest evidence of the evolution of developed PEV policy, a reflection of these three utilities’ standing in PEV user share (i.e. 93%). As PEV use continues to expand, more utilities may offer this PEV-focused rate option. LADWP’s PEV-only rate offers a \$0.025/kilowatt-hour (kWh) discount for night and weekend charging (Los Angeles Department of Water and Power 2012). The Southern California

Edison PEV-only plan offers a rate \$0.12/kWh during off-peak hours, which rises to \$0.28/kWh⁴⁴ during on-peak hours (noon – 9:00 p.m.) (Southern California Edison 2012). In all cases, the installation of a second meter is required to track separate PEV electricity consumption.

Whole-house TOU rates. Municipal utilities in Anaheim, Azusa, Burbank, Los Angeles, Pasadena, and the Imperial Irrigation District, as well as San Diego Gas and Electric and Southern California Edison, offer a TOU option for the entire household's electricity use. The plans offer a range of discounts and customer suitability. Azusa Light and Water offers a \$0.05/kWh discount between the hours of 10:00 p.m. and 6:00 a.m. for electricity use between 50 kWh and 500 kWh (Azusa Light and Water). The LADWP plan requires no minimum electricity use and offers a discount of \$0.025/kWh for up to 500 kWh for night and weekend use (Los Angeles Department of Water and Power 2012).

The options provided by Pasadena Water and Power offer preference to a greater range of PEV drivers. Pasadena provides two separate whole-house TOU plans. The first keeps on-peak (noon – 9:00 p.m.) rates the same, while mid-peak (8:00 a.m. – noon, 9:00 p.m. – midnight) and off-peak (midnight – 8:00 a.m.) rates are reduced by \$0.01 and \$0.02/kWh, respectively. The second Pasadena whole-house TOU plan charges \$0.04/kWh more during on-peak hours and discounts \$0.025/kWh and \$0.045 cents/kWh during mid- and off-peak hours, respectively. For these plans, a replacement meter is required (Pasadena Water and Power).

14.4.2 Multi-unit residential policies

TOU policies for multi-unit dwellings (MUDs) are not as developed. In some cases, such as with Anaheim Public Utilities and Burbank Water and Power, MUD TOU rates are offered on a “case by case”⁴⁵ basis, depending on a number of variables such as access to a dedicated parking space. LADWP, Pasadena Water and Power, San Diego Gas and Electric, and Southern California Edison provide the previously-mentioned single-family PEV TOU rates to independent MUD units as well. This may require a dedicated parking space and outlet⁴⁶. LADWP, San Diego Gas and Electric and Southern California Edison offer TOU rates to entire MUD complexes but in the case of condominiums encourage preemptive involvement of the homeowner's association (HOA). The only utility offering a PEV-only MUD building plan is San Diego Gas and Electric. This plan is only for entire complexes with “shared walls” (San Diego Gas and Electric).

14.4.3 Commercial TOU Policies

Many Southern California utilities offer the option of whole-building TOU rates to commercial customers. A certain level of electricity consumption is required to be eligible for such rates. This minimum requirement can range from 200 kW (Azusa Light and Power) to 500 kW⁴⁷. More than

44 This is the rate for summer months. The rate decreases to \$0.22/kWh for winter months.

45 Interview with Anaheim Public Utilities, November 27, 2012.

46 Interview with Southern California Edison, December 18, 2012.

47 Interview with Anaheim Public Utilities, November 27, 2012.

one commercial TOU option may also be available, as is the case with Vernon Light and Power (City of Vernon 2009). Southern California Edison is the only utility to offer a PEV-only commercial TOU plan. The electricity limit to this plan is 500 kW (Southern California Edison 2012).

14.5 Incentives

Utilities may also offer a number of PEV-focused incentives. These incentives can include equipment rebates, rate rebates or credits or bill credits.

14.5.1 Second meter incentives

The required installation of a second meters can be costly, sometimes exceeding \$2,000 with installation costs included⁴⁸. For required second meter installations, LADWP is the only utility to offer free installation. In the cases of Southern California Edison and San Diego Gas and Electric, a licensed electrician is required to install the second meter at the customer's expense. When only the replacement of a basic meter with a specialized TOU meter is required, the utility provides the service free of charge, as is the case with Pasadena Water and Power.

14.5.2 Equipment rebates

Other equipment incentives include: the LADWP Home Charger Rebate Program, which provides up to \$2,000 towards the cost of charging equipment and installation (Los Angeles Department of Water and Power 2012); and Anaheim Public Utilities' incentive of \$1,500 per charging unit towards purchase, installation and panel upgrades (Anaheim Public Utilities 2012). As a home charging unit represents a significant investment, financial support from utilities is encouraged.

14.5.3 Other types of rebates

Another incentive provided by utilities includes rebates or credits realized in electric bills. This includes the savings from converting to a TOU rate schedule as well as additional savings. For example, Glendale Water and Power offers a \$0.33/day rebate towards the metering charge. On average, this charge equals \$0.27/day, so in effect, the customer is receiving a \$0.06/day credit.⁴⁹ Other incentives include bill credits such as Burbank Water and Power's one-time \$100 credit (Burbank Water and Power 2012).

14.6 Customer Education

As the landscape of PEV use expands, utilities will play an increasingly important role as

48 Interview with Todd Ritter of EV Structures.

49 Glendale Water and Power interview

customer educator. Information can come from bill inserts, the utility's website or telephone service. Due to the breadth of information needed and the Internet's accessibility and ease of use, a well-designed and intuitive website is of primary importance in transmitting the knowledge needed by a prospective PEV driver.

To supplement the website, telephone access to a utility representative is necessary to answer further questions or to correct possible misconceptions. Education across communication platforms can be used by utilities to augment their customer service and to better demonstrate the programs and incentives available to potential PEV customers.

A utility's website should be considered the primary medium for education, and as such should act as a comprehensive resource for potential PEV owners. Menu options on the utility website should separate residential and business customers. Websites should also include step-by-step instructions for the installation of charging units for different land uses and site hosts. These steps include application procedures, inspection requests, installation processes, permit information and incentive requirements and deadlines. Providing an easy-to-use checklist can help the PEV customer organize and prioritize actions. Other examples of helpful online education tools include the LADWP's basic process description (Los Angeles Department of Water and Power 2012) and Southern California Edison's series of videos (Southern California Edison 2012). Other education materials can include frequently asked questions (FAQ) sections or fact sheets. Additional paper materials such as rebate applications should also be accessible and printable through the utility's website.

Utility websites should clearly explain specific customer options. This includes rate options and any incentives offered to new PEV owners. As specialized rates may be new to certain customers, a website should clearly define the differences between standard rates and TOU rates and how these differences will affect the customer. LADWP's "EV Rates, Meter Options and Home Chargers Fact Sheet" (Los Angeles Department of Water and Power 2012) is an example of how to organize this information. LADWP displays pros and cons and offers additional information about each rate option.

Easy-to-read charts such as pro-con matrices present information in an easily digestible manner and are encouraged. Other information should include the rate schedule and associated charges. Southern California Edison takes an interactive approach with an easy-to-use "Plug-in Car Rate Assistant" (Southern California Edison 2012). This practical tool offers recommended individual electricity rates and associated annual savings based on zip code, vehicle type, miles driven per year, gasoline price and expected time of charge.

Incentive information is fundamental to PEV customer education. These advantageous policies act to alleviate the cost of transition to PEV use. As these policies directly affect the customer, it is important that necessary information is accessible. Utilities such as Anaheim Public Utilities and LADWP dedicate a full website to display incentive opportunities including those at the utility, state and federal level.

This general information should be complemented by a phone service to offer further clarity

or to respond to any additional customer-specific questions. A PEV specialist can offer personal interaction and establishes a level of comfort with potential PEV customers. Southern California Edison offers a model phone service providing PEV expertise on an independent PEV phone line. Again, the goal of customer support on multiple platforms is to ease the process of becoming a PEV driver.

14.7 Utility recommendations

The following recommendations are intended for utility planners, but city planners who coordinate with utilities on PEV charging installation may benefit from understanding measures utilities can take to advance PEV readiness. The more ready the local utility, the easier it will be for city planners to facilitate convenient, cost-efficient PEV charging (and vice-versa).

1. Educate customers about the utility's permitting and inspection process for all applicable land uses (i.e., single-family residential, MUD, commercial, industrial). Make the information available online, over the telephone and in bill inserts as appropriate.
2. Offer whole-house TOU rates for single-family homes and consider whole-building TOU rates for MUDs and workplaces.
3. Understand potential growth in PEV charging demand in the utility service territory. The maps and projections provided in the Southern California Plug-in Electric Vehicle Atlas can help utilities plan for upgrading substations and transformers to accommodate increased load, particularly in MUD- and workplace-dense areas.
4. Allow use of energy management systems to balance PEV charging electrical load in lieu of panel upgrades where appropriate.
5. Coordinate with the local municipality's planning and/or building department to receive notification of applications for PEV charging permits.

14.8 Additional resources

In addition to the utility websites in the reference list, the following resources provide information on ways local jurisdictions can collaborate with utilities on PEV readiness measures:

The Bay Area Climate Collaborative's *Ready, Set, Charge, California! A Guide to EV-Ready Communities* (2011) provides information on utility notification of charging unit installations, submetering and integration of PEVs with renewable energy and efficiency strategies.

http://www.baclimate.org/images/stories/actionareas/ev/guidelines/readysetcharge_evguidelines.pdf

- Chapter 6 (Utility considerations)

The Transportation and Climate Initiative (TCI) is a collaboration of transportation, environment, and energy agencies in the northeast and mid-Atlantic regions of the U.S. As part of its Northeast Electric Vehicle Network project, TCI has produced the following document that discusses utility roles in PEV readiness planning and case studies (including the Los Angeles Department of Water and Power).

http://www.georgetownclimate.org/sites/default/files/EV-Ready_Codes_for_the_Built_Environment_0.pdf

14.9 References

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